



Training Course:
Gas Detection Systems: Fundamentals and
Applications

18 - 22 July 2027
Cairo (Egypt)

Training Course: Gas Detection Systems: Fundamentals and Applications

Training Course code: EN235465 From: 18 - 22 July 2027 Venue: Cairo (Egypt) - Training Course Fees: 4410 € Euro

Introduction

Gas detection systems play a vital role in protecting personnel, facilities, and the environment from hazardous gas leaks and exposure. In industrial sectors such as oil & gas, petrochemicals, and manufacturing, early detection is critical to preventing accidents, ensuring compliance, and maintaining operational safety.

This program, designed by Global Horizon Training Center, provides participants with the essential knowledge and practical skills required to understand, select, operate, and maintain gas detection systems in line with international safety standards and best practices.

Course Objectives

By the end of this program, participants will be able to:

- Understand the fundamentals of gas hazards and detection principles
- Identify different types of gases and associated risks in industrial environments
- Distinguish between various gas detection technologies and their applications
- Select appropriate gas detection systems based on operational requirements
- Install, test, and calibrate gas detection equipment
- Perform maintenance and troubleshooting of gas detection systems
- Ensure compliance with international safety standards and regulations
- Integrate gas detection systems with broader safety and control systems

Target Audience

This program is designed for:

- HSE Engineers and Safety Officers
- Electrical and Instrumentation Engineers
- Maintenance and Facility Management Professionals
- Oil & Gas and Petrochemical Industry Personnel
- Technicians involved in gas detection system installation and maintenance
- Risk Management and Compliance Professionals

Outline

Day 1: Fundamentals of Gas Detection and Safety

- Introduction to gas hazards and industrial risks
- Types of gases: toxic, flammable, and oxygen-deficient environments
- Gas properties and behavior density, dispersion, ignition limits
- Overview of gas detection systems and applications
- Introduction to safety standards and regulations

Day 2: Gas Detection Technologies and Equipment

- Types of gas detectors: fixed and portable systems
- Detection technologies: catalytic, infrared IR, electrochemical, PID
- Sensors and their operating principles
- Advantages and limitations of each technology
- Selection criteria for gas detection systems

Day 3: System Design and Installation

- Gas detection system architecture and components
- Detector placement and coverage strategies
- Hazardous area classification and zoning
- Installation requirements and best practices
- System documentation and design considerations

Day 4: Calibration, Maintenance, and Troubleshooting

- Calibration techniques and frequency requirements
- Preventive and corrective maintenance
- Common system faults and troubleshooting methods
- Sensor lifespan and replacement strategies
- Record keeping and compliance documentation

Day 5: Integration, Safety Management, and Case Studies

- Integration with fire and safety systems
- Interface with control systems SCADA, BMS
- Alarm management and emergency response procedures
- Safety audits and regulatory compliance
- Case studies and real-world applications

Registration form on the Training Course: Gas Detection Systems: Fundamentals and Applications

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